

**AMENDMENT UNDER 37 C.F.R. § 1.116  
U.S. Appl. No. 09/0916,210 (Q61834)**

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

- 1-8. (canceled).
9. (original): An object activity recognition method comprising the steps of:
  - (a) obtaining feature vectors by motion estimation for video frames;
  - (b) determining a state, to which each frame belongs, using the obtained feature vectors; and
  - (c) determining an activity model, which maximizes the probability between activity models and a video frame provided from a given activity model dictionary using a transition matrix for the determined state, as the recognized activity.
10. (previously presented): The object activity recognition method of claim 9, wherein the step (c) comprises a step of finding an activity model, which maximizes probability  $P(O|\lambda)$  from the given activity model dictionary  $\{\lambda_1, \lambda_2, \dots, \lambda_E\}$ , when  $T$  is a positive integer indicating the number of frames forming the video sequence,  $Z_1, Z_2, \dots, Z_T$  are feature vectors of

**AMENDMENT UNDER 37 C.F.R. § 1.116**  
**U.S. Appl. No. 09/0916,210 (Q61834)**

first frame, second frame, ..., T-th frame, respectively, and if video frame  $O=\{Z_1, Z_2, \dots, Z_T\}$  is given and E is the number of state models.

11. (Currently amended) ~~The~~ An object activity recognition method ~~of claim 10~~ comprising the steps of:

(a) obtaining feature vectors by motion estimation for video frames;

(b) determining a state, to which each frame belongs, using the obtained feature vectors;

and

(c) determining an activity model, which maximizes the probability between activity models and a video frame provided from a given activity model dictionary using a transition matrix for the determined state, as the recognized activity, wherein the step (c) comprises a step of finding an activity model, which maximizes probability  $P(O|\lambda)$  from the given activity model dictionary  $\{\lambda_1, \lambda_2, \dots, \lambda_E\}$ , when T is a positive integer indicating the number of frames forming the video sequence,  $Z_1, Z_2, \dots, Z_T$  are feature vectors of first frame, second frame, ..., T-th frame, respectively, and if video frame  $O=\{Z_1, Z_2, \dots, Z_T\}$  is given and E is the number of state models, and wherein the transition matrix is obtained by using an expectation-maximization (EM) algorithm based on the observation symbol probability  $\{b_j(\cdot)\}$  corresponding to scene j in the training process.